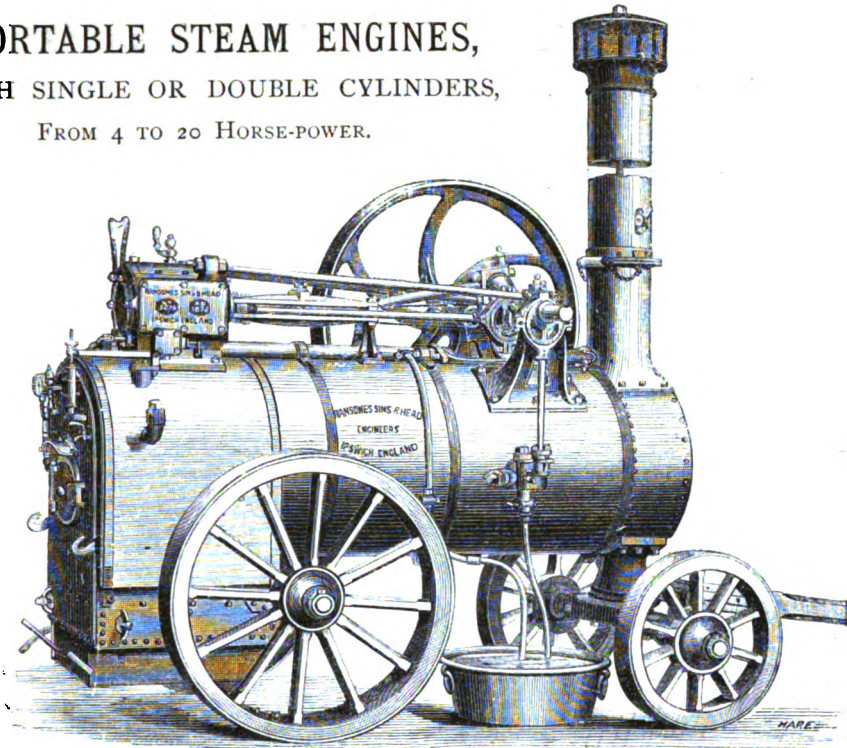
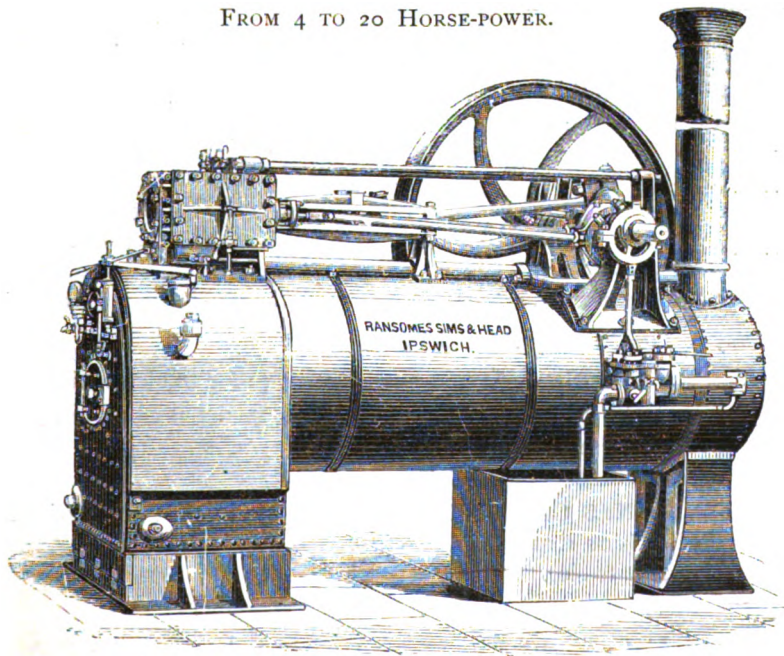


**PORTABLE STEAM ENGINES,
WITH SINGLE OR DOUBLE CYLINDERS,
FROM 4 TO 20 HORSE-POWER.**



**FIXED ENGINES,
ON MULTITUBULAR BOILERS, WITH SINGLE OR DOUBLE CYLINDERS,
FROM 4 TO 20 HORSE-POWER.**



**RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.**

PORTABLE ENGINES.

These Engines are all of the very first quality. Every Engine is tried under steam before it leaves the Works.

The Prices include a Steam-Pressure Gauge, two Safety Valves, Arrangement for Heating Feed Water, Signal Whistle, Waterproof Cover, Tube Brush, Fire Pricker, Rake, Shovel, Screw Spanners, Oil Can, Large Funnel, and spare Gauge-Glass.

ORDINARY PORTABLE ENGINES.—Working pressure 70 lb. per square inch, at which they give off double their nominal horse-power.

Consumption of good Coal, $5\frac{1}{2}$ to 6 lb. per horse-power per hour.

PRICES.

Horse-power.	With all usual Accessories.	With large Fire Box for burning Wood.	Set of additional Wearing Parts.	Average Nett Weight.	Cost of Packing.
	£ s. d.	£ s. d.	£ s. d.	tons cwt. qrs.	£ s. d.
4 Horse-power, 1 Cylinder..	180 0 0	184 0 0	13 5 0	2 3 0	4 0 0
6 " 1 " ..	220 0 0	226 0 0	15 10 0	3 6 0	6 0 0
8 " 1 " ..	255 0 0	263 0 0	18 10 0	3 13 0	8 0 0
10 " 1 " ..	295 0 0	305 0 0	21 0 0	4 10 0	10 0 0
10 " 2 " ..	320 0 0	330 0 0	24 15 0	4 13 0	10 0 0
12 " 1 " ..	335 0 0	347 0 0	23 0 0	4 18 0	12 0 0
12 " 2 " ..	370 0 0	382 0 0	27 10 0	5 0 0	12 0 0
14 " 2 " ..	415 0 0	429 0 0	33 0 0	5 8 0	14 0 0
16 " 2 " ..	455 0 0	471 0 0	34 15 0	6 0 0	16 0 0
20 " 2 " ..	545 0 0	565 0 0	39 0 0	8 3 0	20 0 0

EXPANSION PORTABLE ENGINES.—Working pressure 80 lb. per square inch, at which they give off *three* times their nominal horse-power.

Consumption of good Coal $3\frac{1}{2}$ to $3\frac{3}{4}$ lb. per horse-power per hour.

PRICES.

	6-Horse, 1 Cylinder.	8-Horse, 1 Cylinder.	10-Horse, 1 Cylinder.	8-Horse, 2 Cylinders.	12-Horse, 2 Cylinders.	14-Horse, 2 Cylinders.	16-Horse, 2 Cylinders.	20-Horse, 2 Cylinders.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Including same Accessories as for ordinary Portable Engine ..	260 0 0	295 0 0	340 0 0	395 0 0	455 0 0	520 0 0	580 0 0	695 0 0
Set of extra Wearing Parts	23 15 0	26 10 0	27 10 0	36 10 0	38 10 0	42 0 0	46 0 0	53 0 0
Packing for Shipment..	6 0 0	8 0 0	10 0 0	10 0 0	12 0 0	14 0 0	16 0 0	20 0 0
Average Weight unpacked	76 cwt.	90 cwt.	112 cwt.	115 cwt.	128 cwt.	131 cwt.	150 cwt.	186 cwt.

These Engines are so constructed as to burn Wood equally as well as Coals.

Additions to any of the Ordinary Portable or Expansion Portable Engines :

Link-Motion Reversing Gear, £15 for Single and £30 for Double Cylinder Engines.

Powerful Screw Brake to one hind road-wheel for mountainous countries, £10.

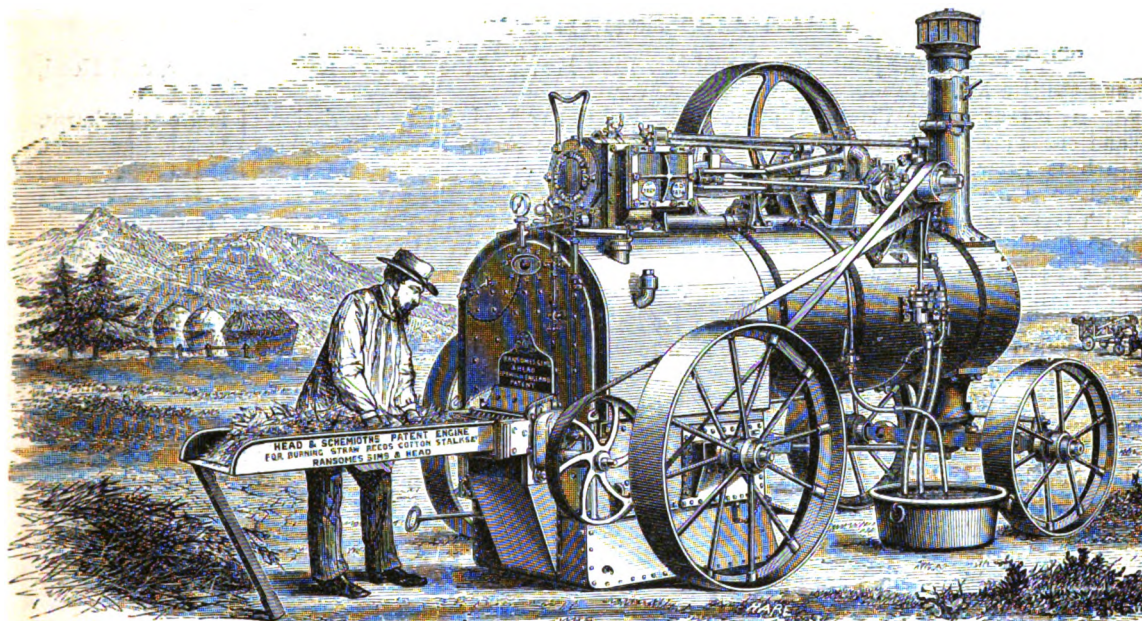
Awning to protect driver in tropical climates, £10.

STATIONARY ENGINES ON MULTITUBULAR BOILERS.—Any of the above Engines can be supplied on Pedestals as shown, instead of Travelling Wheels, at from £5 to £15 reduction from prices above, according to size.

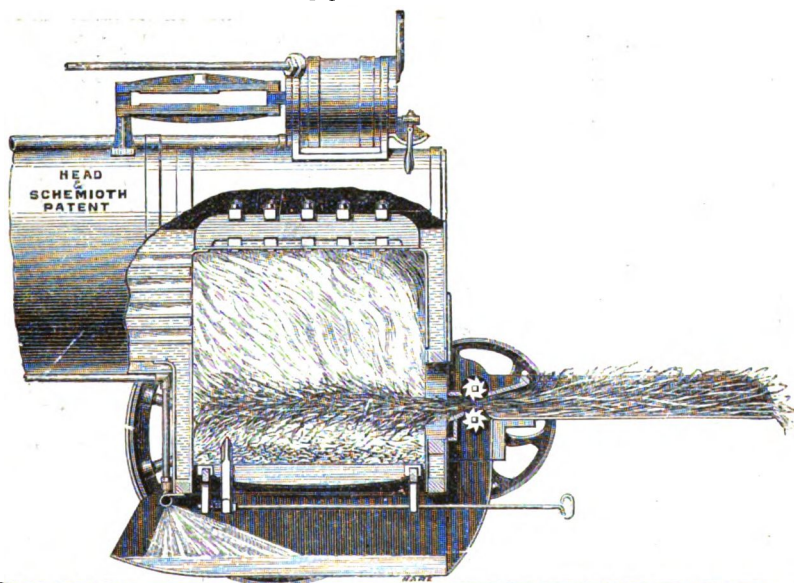
RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

PATENT STRAW-BURNING ENGINE.

Perspective view, showing position of Feeder when the Engine is at work.



Section of Fire Box, showing method of holding Straw and other vegetable products in suspension in the Fire Box during process of combustion.



RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

IMPROVED PATENT PORTABLE STEAM ENGINE.

ADAPTED FOR BURNING STRAW, COTTON AND MAIZE STALKS, REEDS, TIBEN, &C., AS WELL AS COAL OR WOOD.

HEAD AND SCHEMIOTH'S PATENT.

This Engine is the joint invention of Mr. John Head, of the Firm of Ransomes, Sims, and Head, and the late Mr. Schemioth, a Russian engineer.

By means of the Patent Apparatus attached to the Engine, any description of fuel can be burnt, and consequently Steam can now be used as a Motive Power in countries where vegetable products, such as straw, reeds, cotton and maize stalks, sugar-cane refuse, &c., are abundant, but where coal and wood are not easily obtained except at a very high price. The Apparatus for feeding the Engine with straw, &c., is self acting, and driven from the Engine by means of a strap. It can easily be disconnected from the Boiler and the ordinary fire-door substituted in its place, in cases where it may be expedient to burn wood or coal. Steam may be got up with straw as easily as with any other combustible, by attaching a handle to the feeding rollers, and turning them by hand instead of steam power. One man only is necessary to feed the straw into the machine; and an Engine of this description does not require any more men to superintend it than if coal or wood were used as fuel.

The average consumption of straw is about four to five times the weight of that of coal, and, according to experiments made, about eight to ten sheaves of straw are required to thrash one hundred sheaves of wheat.

A number of these Patent Engines have been at work for some time in Russia and other countries burning straw, and have given the utmost satisfaction; they have also been used in Egypt with cotton stalks, and in India with indigo refuse as fuel, and in both cases with the most successful results. By means of this Patent Apparatus small branches of trees, twigs, and furze can also be employed as fuel.

The Apparatus can be adapted to Fixed Boilers as well as to Portable Engines.

The Portable Engines are at present manufactured of 8 to 20 horse-power, both of the Ordinary and Expansion classes.

PRICES.

ORDINARY ENGINES.

	With usual Accessories.			Set of additional Wearing Parts.			Average Nett Weight.			Cost of Packing.		
	£	s.	d.	£	s.	d.	tons	cwt.	qrs.	£	s.	d.
8 Horse-power, 1 Cylinder..	325	0	0	18	10	0	4	15	0	10	10	0
10 " 1 " "	370	0	0	21	0	0	5	12	0	12	10	0
10 " 2 " "	395	0	0	24	15	0	5	16	0	12	10	0
12 " 1 " "	415	0	0	23	0	0	6	10	0	14	10	0
12 " 2 " "	450	0	0	27	10	0	6	15	0	14	10	0
14 " 2 " "	505	0	0	33	0	0	7	3	0	16	10	0
16 " 2 " "	550	0	0	34	15	0	8	0	0	18	10	0
20 " 2 " "	645	0	0	39	0	0	9	8	0	22	10	0

EXPANSION ENGINES.

8 Horse-power, 1 Cylinder..	345	0	0	26	10	0	5	12	0	10	10	0
10 " 1 " "	395	0	0	27	10	0	6	17	0	12	10	0
10 " 2 " "	450	0	0	36	10	0	7	0	0	12	10	0
12 " 2 " "	510	0	0	38	10	0	7	15	0	14	10	0
14 " 2 " "	590	0	0	42	0	0	8	7	0	16	10	0
16 " 2 " "	655	0	0	46	0	0	9	5	0	18	10	0
20 " 2 " "	775	0	0	53	0	0	10	15	0	22	10	0

These Prices include a Steam-Pressure Gauge, Two Safety Valves, Signal Whistle, Waterproof Cover, Tube Brush, Fire Pricker, Rake, Shovel, Screw Spanner, Oil Can, Large Funnel, and spare Gauge-Glass.

The following additional extras are also required for these Engines for being used with any description of Fuel, viz. Extra Furnace Bars for Wood, 2 Bearer Bars, 1 Pricker for Fire, 1 Scraper for Tube Plate, 4 Rakes for cleaning Bars, 1 Steel Tube Cleaner, 1 Hoe for clearing Ash Pen, 1 Door for use when burning wood, and Cast Pan for hot ashes.

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

STEAM THRASHING MACHINERY.

RANSOMES, SIMS, AND HEAD construct their Thrashing Machines to fulfil the following conditions :

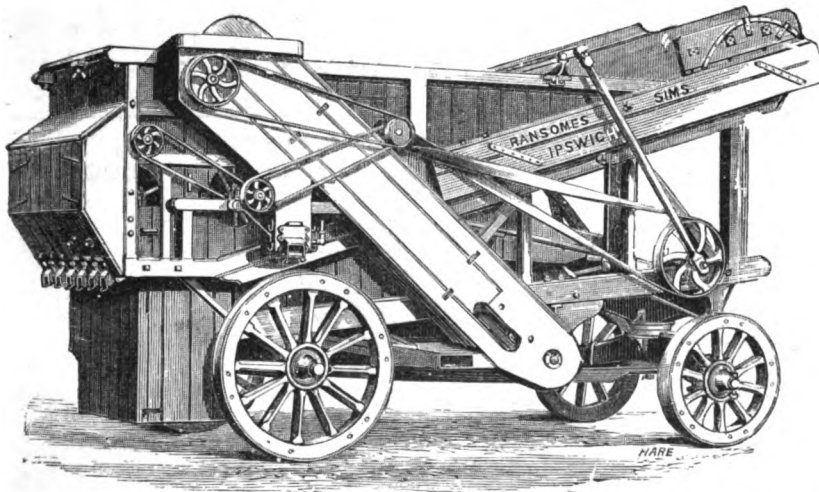
- 1st. DELIVERY OF A LARGE QUANTITY OF PERFECTLY CLEAN CORN IN A SHORT SPACE OF TIME.
- 2nd. STRENGTH OF CONSTRUCTION ; SIMPLICITY OF DESIGN ; AND FACILITY FOR REPAIRS.
- 3rd. ECONOMY OF FUEL ; AND SMALL AMOUNT OF POWER NECESSARY TO DRIVE THEM.

As the method of thrashing all descriptions of grain, and delivering the straw, differs in most countries, according to the nature of the crops and the practical utility of the straw, R., S., and H. have divided their Thrashing Machines into five classes, namely :

1. CLASS A—Double-Blast Machines, with Patent Rotary Screen, and all arrangements for making the most perfect and uniform sample of grain.
2. CLASS B—Double Blast, but without Rotary Screen. They clean the grain perfectly, but only separate the small and broken kernels from the bulk. They are well adapted for all districts where the grain is sold in bulk for exportation, irrespective of size and uniformity of sample.
3. CLASS C—Single-Blast Machines. They deliver the corn clean enough for some markets ; but for other places it requires to be passed through a finishing Dressing Machine. They are extremely simple in their construction and rapid in their operation.
- 4 and 5. CLASSES H and M—These Machines are similar to those of Classes B and C, but are fitted with an apparatus for chopping and bruising the straw as it leaves the Machine. They are specially adapted for hot countries, where hay is not grown, and straw is used for fodder.

DOUBLE-BLAST THRASHING MACHINE,

FITTED WITH SCREEN FOR FINISHING THE GRAIN.

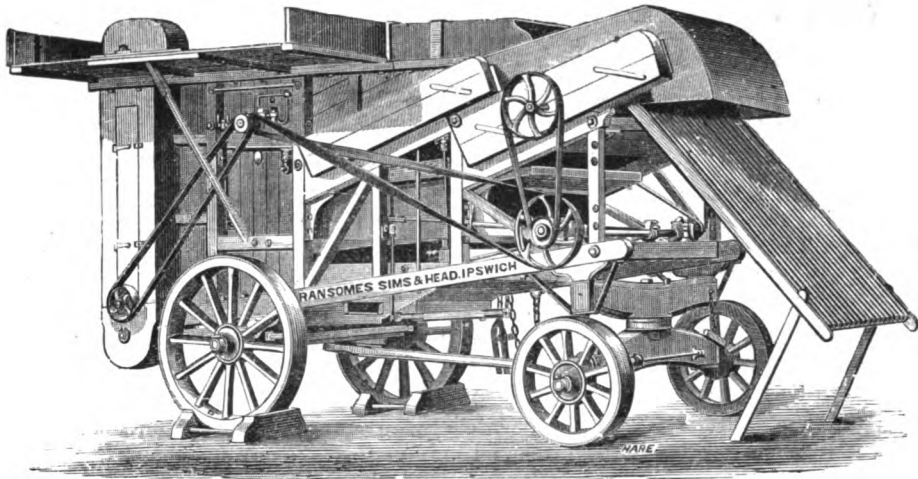


FINISHING MACHINES, CLASS A.

MARK.	Width of Drum.	Price, including Waterproof Cover and all usual Accessories.			Complete Set of additional Wearing Parts.			Cost of Packing.			Average Nett Weight.	Sets of Machines, including suitable Engine, Thrashing Machine, and Driving Band.					
												Engine adapted for burning Wood.			Engine adapted for burning Coal.		
A3	in. 60	£	s.	d.	£	s.	d.	£	s.	d.	cwt.	£	s.	d.	£	s.	d.
A1	54	170	0	0	17	0	0	13	10	0	72½	475	0	0	465	0	0
A9	48	160	0	0	15	10	0	12	10	0	69½	423	0	0	415	0	0
		140	0	0	14	10	0	10	0	0	60	366	0	0	360	0	0

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

POWERFUL THRASHING MACHINES FOR RAPID THRASHING.

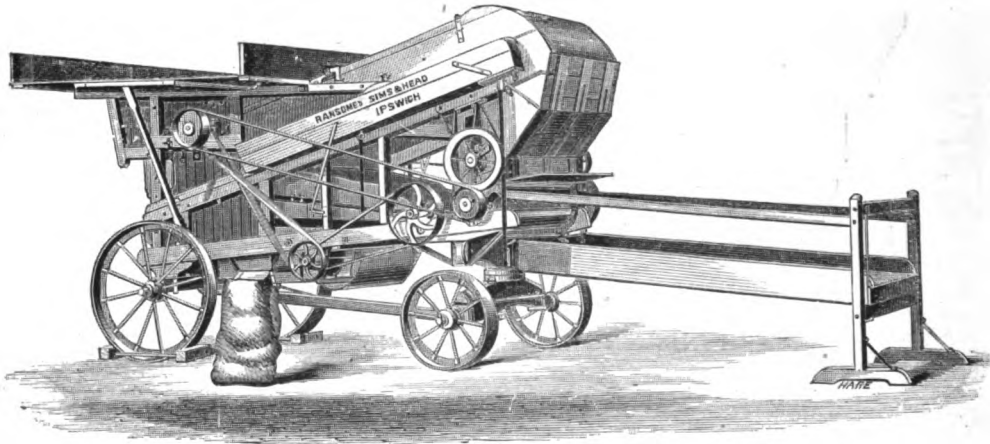


DOUBLE-BLAST MACHINES, CLASS B.

MARK.	Width of Drum.	Price, including Waterproof Cover and all usual Accessories.			Complete Set of additional Wearing Parts.			Cost of Packing.			Nett Weight.	Sets of Machines, including suitable Engine, Thrashing Machine, and Driving Band.					
												Engine adapted for burning Wood.			Engine adapted for burning Coal.		
B3) With {	in.	£	s.	d.	£	s.	d.	£	s.	d.	cwt.	£	s.	d.	£	s.	d.
B1) Double {	60	190	0	0	19	0	0	16	0	0	84	537	0	0	525	0	0
B1) Shakers. {	54	180	0	0	18	0	0	13	10	0	80	485	0	0	475	0	0
B3) With {	60	170	0	0	16	10	0	15	0	0	67	475	0	0	465	0	0
B1) Single {	54	160	0	0	15	0	0	12	10	0	62½	423	0	0	415	0	0
B2) Shakers. {	42	140	0	0	12	0	0	9	0	0	40	366	0	0	360	0	0

THRASHING MACHINES,

With Straw Chopping and Bruising Apparatus, for hot Countries.



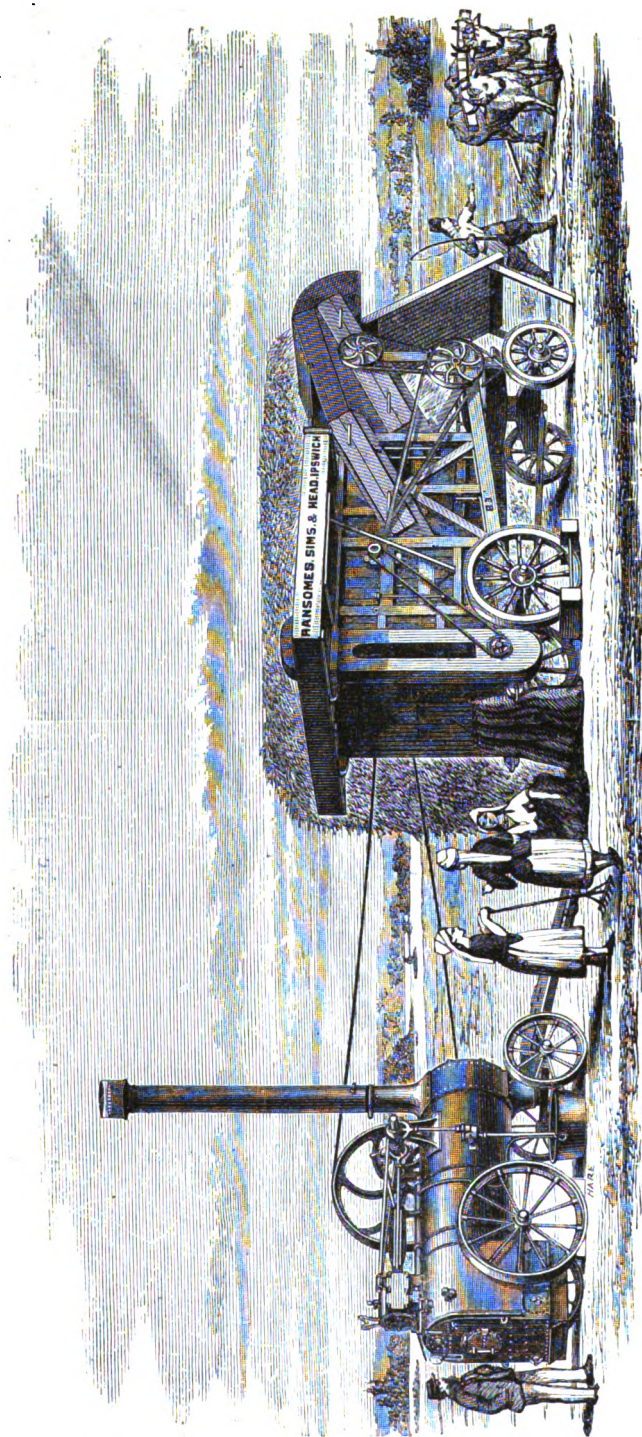
CLASS M.

MARK.	Width of Drum.	Price, including Waterproof Cover and all usual Accessories.			Complete Set of additional Wearing Parts.			Cost of Packing.			Nett Weight.	Sets of Machines, including suitable Engines, Thrashing Machines, and Driving Band.					
												Engine adapted for burning Wood.			Engine adapted for burning Coal.		
M3	in.	£	s.	d.	£	s.	d.	£	s.	d.	cwt.	£	s.	d.	£	s.	d.
M1	60	240	0	0	38	10	0	14	10	0	81	587	0	0	520	0	0
	54	215	0	0	34	15	0	13	10	0	76						

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

STEAM THRASHING MACHINE,

CLASS B, READY FOR WORK.



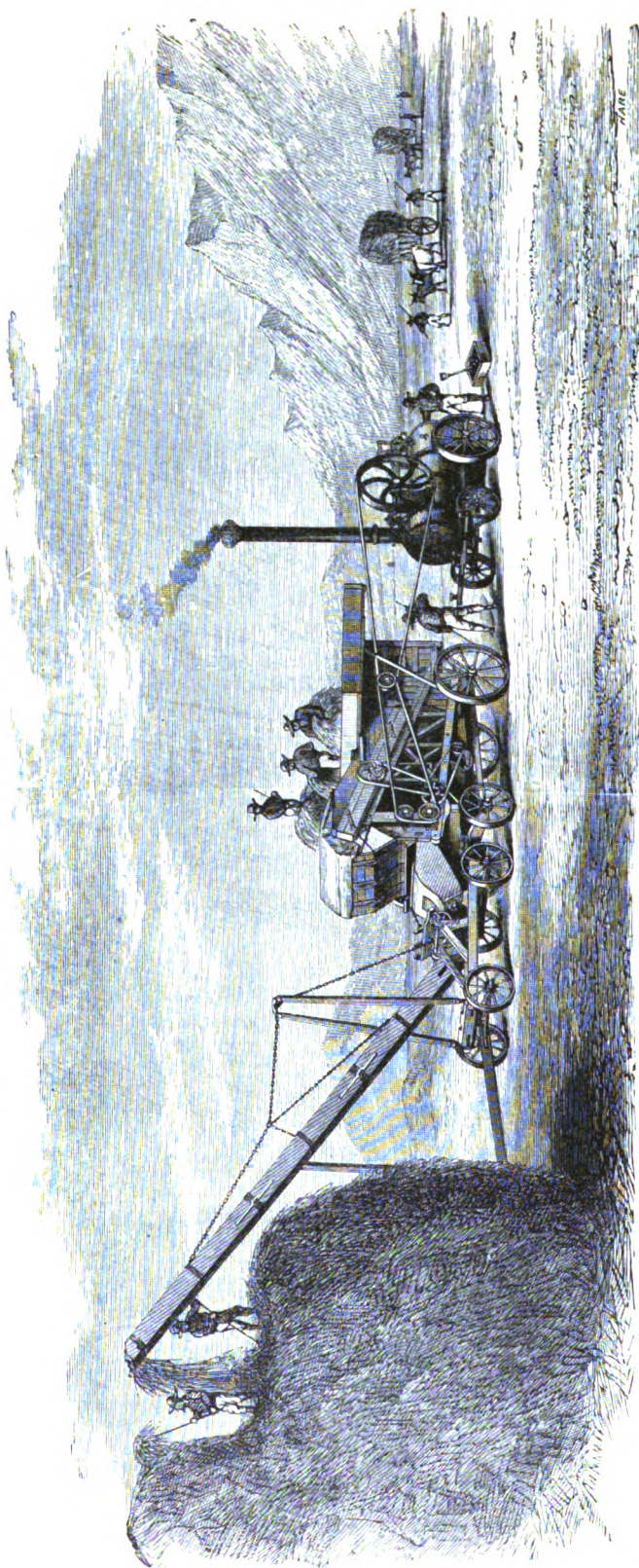
RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

These Machines are specially adapted for the large corn-growing districts of the east of Europe, where it is necessary to thrash a large quantity of grain in a very short time. All the wearing parts are made doubly strong, so that the chances of breakage are reduced to a minimum, a matter of great importance in all countries where skilled labour is scarce and the nearest repairing shop a day's journey from the farm.

STEAM THRASHING MACHINE,

CLASS H OR M, AT WORK.

FITTED WITH APPARATUS FOR CHOPPING AND BRUISING THE STRAW, AND ELEVATOR FOR BLOWING THE CHOPPED STRAW ON TO THE STACK.



These Machines are specially suitable for all hot countries, where the grain has hitherto been trodden out by the feet of either horses or mules.

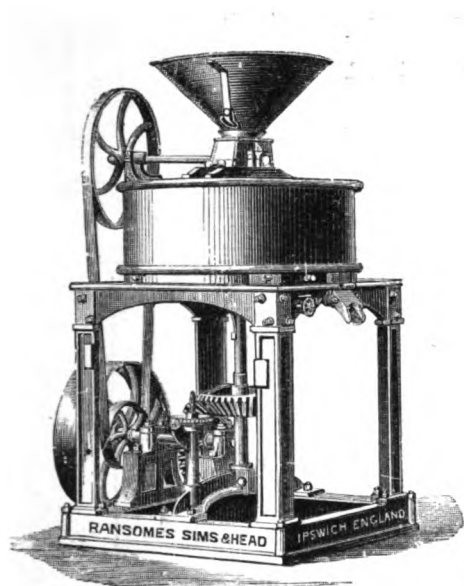
When the Machine is at work, the wheat, barley, or oats to be thrashed are fed in at the top of the Machine in the ordinary manner, and the grain comes out at one end of the Machine, perfectly clean and ready for market; whilst the straw passes out of the other end into the Straw Chopper, which reduces it into small pieces, perfectly separated and softened, in the same way as when trodden out by cattle; in addition to which, the straw thus chopped up is entirely free from dirt, dust, or dung.

The results obtained by these Machines in practice have shown that they are much more economical than the old system of treading out the grain. The farmer is enabled to thrash a large quantity of grain in a short space of time, and without the immense loss which has always attended the method hitherto employed; in addition to which he obtains a better price for his grain, owing to its being perfectly clean, and of a uniform sample; and the cattle also thrive better on the straw chopped by the Machine, on account of its freedom from dirt.

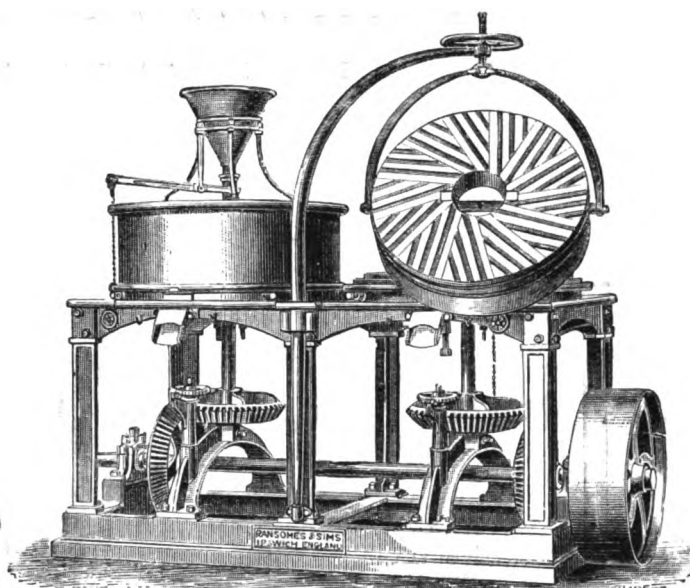
RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

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MILLS FOR GRINDING WHEAT, BARLEY, RYE, MAIZE, RICE, ETC.



MILL FOR GRINDING MAIZE.



CORN MILL, WITH TWO PAIRS OF STONES.

PRICES AND PARTICULARS OF PORTABLE CORN-MILLS ON IRON FRAMES.

Diameter of Stones	SINGLE MILLS.				DOUBLE MILLS.			
	30 inches.	36 inches.	42 inches.	48 inches.	36 inches.	42 inches.	48 inches.	
French Burr Stones	£ 55 0 0	£ 68 0 0	£ 83 0 0	£ 104 0 0	£ 141 0 0	£ 172 0 0	£ 218 0 0	
Lerbyshire Stones	49 0 0	60 0 0	73 0 0	90 0 0	125 0 0	152 0 0	190 0 0	
Mills without Stones	44 0 0	53 0 0	63 0 0	77 0 0	111 0 0	132 0 0	164 0 0	
Self-contained Dresser	14 10 0	16 10 0	16 10 0	22 0 0	Not fitted to these Mills.			
Crane for lifting Stones	7 10 0	7 10 0	7 10 0	8 15 0	7 10 0	7 10 0	8 15 0	
Driving Strap	3 5 0	3 5 0	5 0 0	5 0 0	6 10 0	7 10 0	7 10 0	
Mill for grinding Maize, attached to Stone Case	One No. 1 Mill.	One No. 1 Mill.	One No. 1 Mill.	One No. 2 Mill.	Two No. 1 Mills.	Two No. 1 Mills.	Two No. 2 Mills.	
Packing Mill	6 10 0	6 10 0	6 10 0	8 10 0	13 0 0	13 0 0	17 0 0	
Nett Weight	4 0 0	5 5 0	5 15 0	7 0 0	10 10 0	11 10 0	14 0 0	
	24 cwt.	31 cwt.	44 cwt.	65 cwt.	59 cwt.	80 cwt.	125 cwt.	

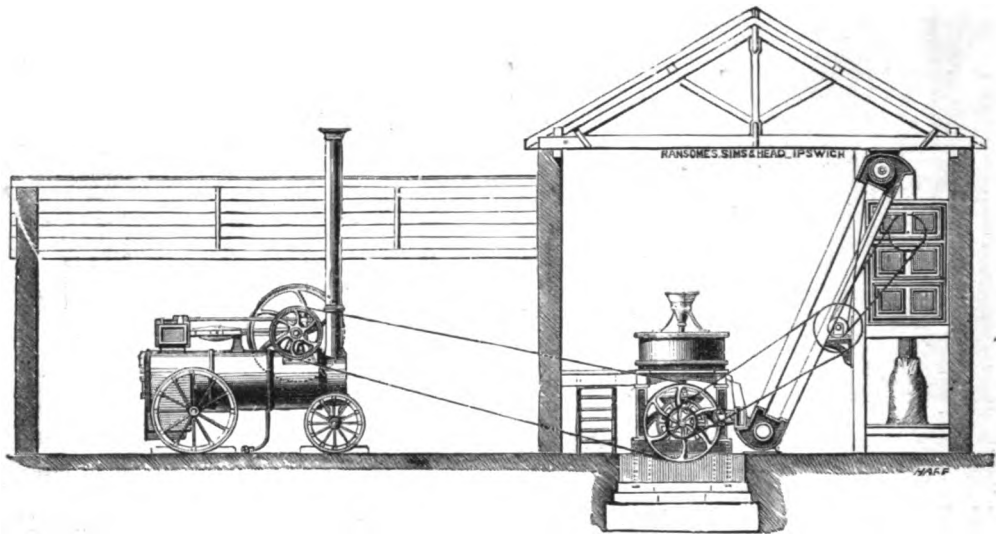
Approximate quantity of Flour ground per Hour by each Mill.	30 inches.	36 inches.	42 inches.	48 inches.
Quantity of corn ground per hour	2½ bush.	3½ bush.	4 bush.	5 bush.
Produce of meal from ditto	145 lb.	190 lb.	240 lb.	300 lb.
Produce of fine dressed flour from ditto, for making bread	90 lb.	120 lb.	150 lb.	180 lb.
Quantity of corn ground into coarse meal, for cattle feeding	5 bush.	6½ bush.	8 bush.	10 bush.
Produce of flour from ditto for cattle-feeding purposes	300 lb.	390 lb.	490 lb.	610 lb.
Average power of portable engine required, including dressing apparatus	2½ h.-p.	3 h.-p.	4 h.-p.	5 h.-p.

When required, these Mills can be fitted with apparatus for breaking up maize or Indian corn into small pieces about the size of a grain of corn. This Machine is a necessary addition to all Mills used in hot countries, where maize flour forms one of the principal articles of food, and with this arrangement Indian corn may be ground as rapidly as any other description of grain.

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

COMPLETE CORN MILL,

DRIVEN BY A PORTABLE ENGINE.



The above Engraving represents one amongst many arrangements of fixed Mill Machinery for producing flour for sale on a considerable scale.

R., S., and H. have many other designs adapted to special buildings, and arranged to be driven by either stationary Engines or semi-fixed Engines, as shown on page 173.

An idea of the cost of such arrangements may be gained from the subjoined figures, and the amount of work each pair of stones will do will be found in the Table on page 181.

Machinery, comprising a semi-fixed Expansion Engine, best French Burr Millstones on iron frame, with main driving strap and pulleys, and Cranes for lifting Stones; Meal Conveyer; Meal Elevator; Silk Boulter, 24 ft. long, with 3 ft. 6 in. reel and silk cover; all the necessary intermediate Shafting, Bearings, Pulleys, and Straps, packed and delivered to London.

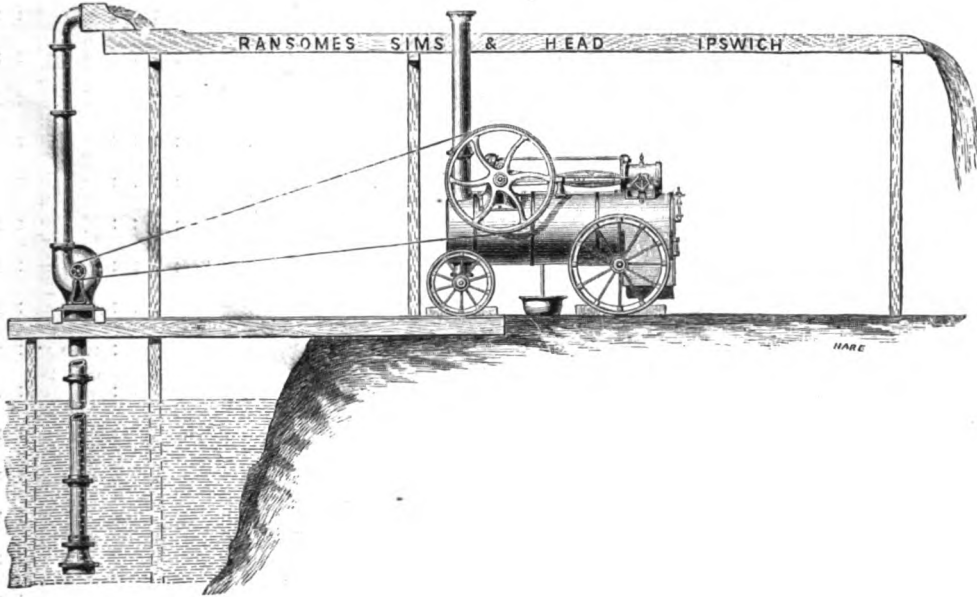
For 2 pairs of 3 ft. 6 in. Stones, with 8 Horse-power Engine	..	..	..	..	£650
3 " 10 "	..	..	..	..	780
4 " 12 "	..	..	..	..	1000
For 2 pairs of 4-ft. Stones, with 10 Horse-power Engine	..	..	..	..	730
3 " 12 "	..	..	..	..	970
4 " 14 "	..	..	..	..	1150

If fixed Engines are desired, the prices will be about 5 per cent. higher, and further cost will be required for foundations and chimneys than is necessary with the semi-fixed Engines.

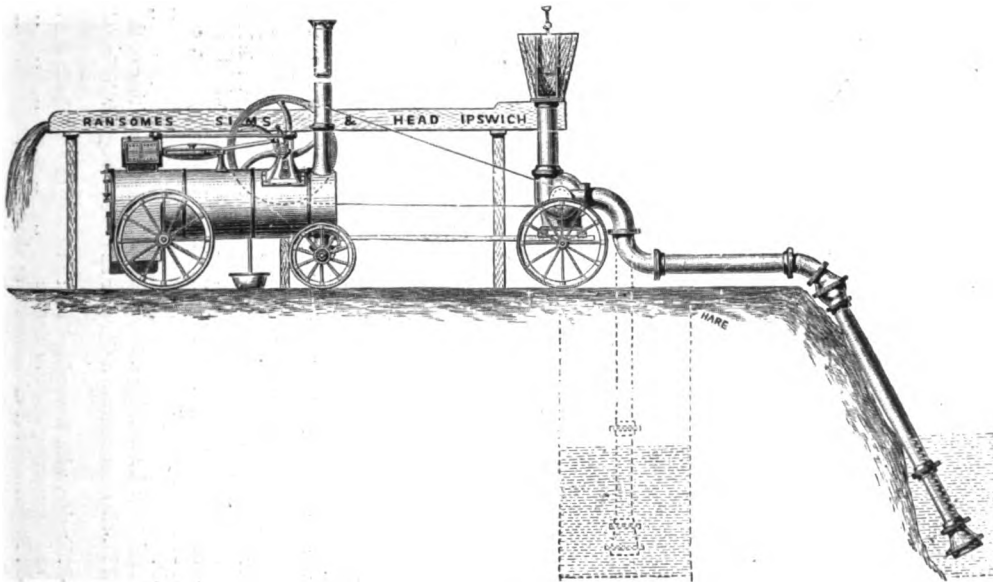
RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

PUMPING MACHINERY FOR IRRIGATION.

FIXED PUMPING MACHINERY, CLASS A.



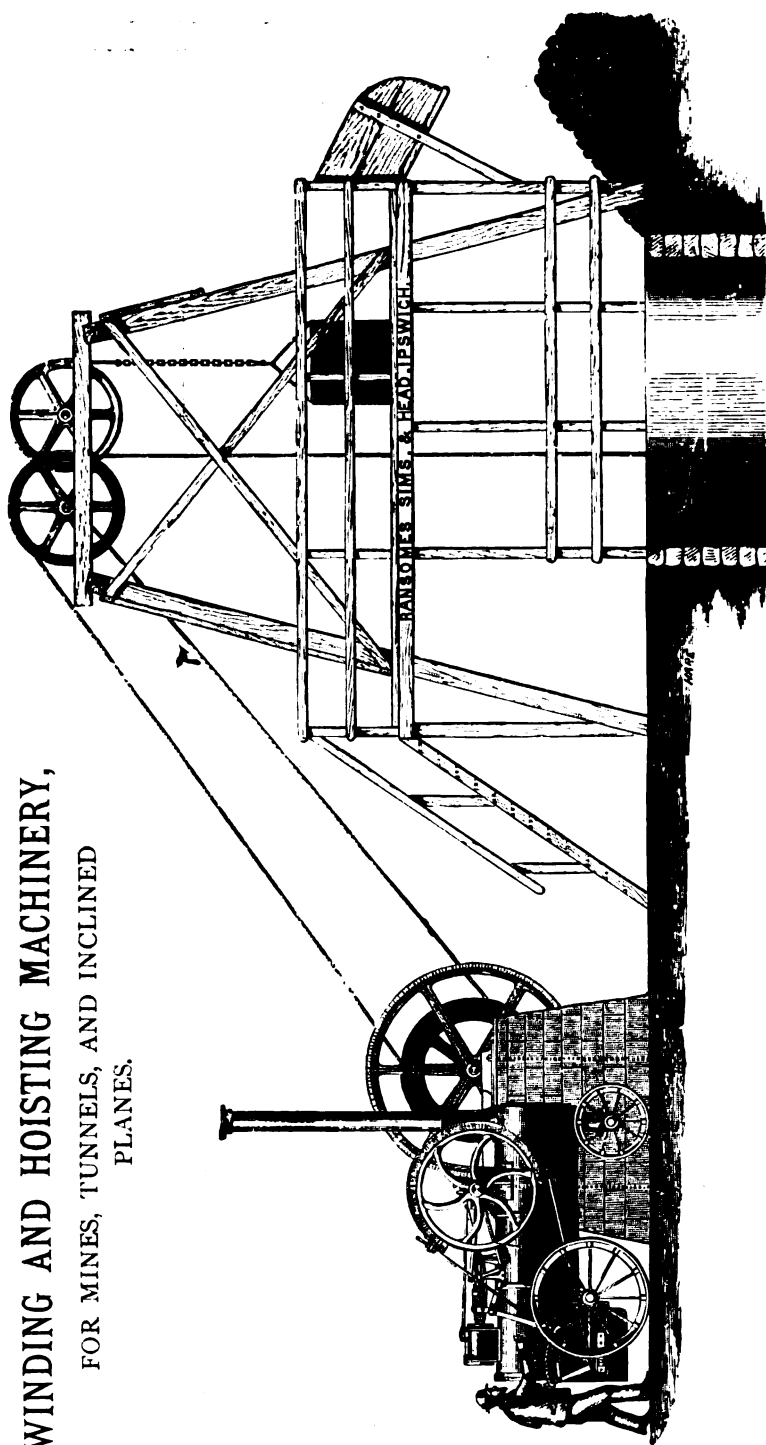
PORTABLE PUMPING MACHINERY, CLASS C.



Prices will be furnished on application. When ordering, it is necessary to state the average distance between Pump and Water, the greatest depth of suction at low water, the height of delivery between Pump and Reservoir, and the maximum quantity of water required to be delivered at maximum lift.

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.

WINDING AND HOISTING MACHINERY, FOR MINES, TUNNELS, AND INCLINED PLANES.



In above arrangement the Engine is of the Portable Expansion class, fitted with a Link-Motion Reversing Gear and a powerful Brake to the Fly Wheel. The Engine stands upon its wheels, or may be set upon pedestals, and is coupled to the first-motion shaft of the winding gear by means of a strong Connector with universal joints, all in wrought iron. The winding gear has drums 6 feet in diameter, with wood beds for the rope to coil upon; a strong brake is fitted to the drums for use in case of accident to the gearing; the hand lever is brought within reach of the engine driver; the pulleys over the pit are 6 feet in diameter, and are shaped to receive a round wire rope. The Prices vary with the power of Engine employed, and are as follows:

12 H.-P. Double-Cylinder Expansion Engine and Winding Gear, complete, packed and delivered to London	£827
10 H.-P. Single-Cylinder	695
8 H.-P.	648
Additional Gear for working a Pump may be adapted to either of the above at an extra cost of..	125

R., S., and H. also manufacture a Cheaper and more Simple Winding Gear, adapted to be worked by a 6, 8, or 10 H.-P. Engine, the Prices of which, packed and delivered to London, are:

6 H.-P. Engine, with Reversing Gear and Brake to Fly Wheel, and Set of Ironwork for large Double-Winding Drums, Shafts, Plummer Blocks, and Connecting Shaft to Engine	£420
8 H.-P. Engine and Set of Ironwork, as above	460
10 H.-P.	500
If fitted with Gear for working a Pump, extra	85
Pulleys for fixing over the Pit, if required	25
The Naves, Spokes, and Shrouds of the Winding Drums are made of iron; if the Wood Sheathing for the bed of the ropes is supplied, extra	30

RANSOMES, SIMS, AND HEAD,
ORWELL WORKS, IPSWICH.